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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference OPP020428KR	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. **PCT/KR2003/000237**	International filing date *(day/month/year)* **03 FEBRUARY 2003 (03.02.2003)**	Priority date *(day/month/year)* 05 FEBRUARY 2002 (05.02.2002)
International Patent Classification (IPC) or national classification and IPC **IPC7 C07C 68/06**		
Applicant **LG CHEM, LTD. et al**		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of _____ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demamd	Date of completion of this report
02 SEPTEMBER 2003 (02.09.2003)	02 JUNE 2004 (02.06.2004)
Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer SHIN, Gun Il Telephone No. 82-42-481-5543

INTERNATIONAL PRELI[redacted]RY EXAMINATION REPORT

[redacted]tional aplication No.
PCT/KR2003/000237

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed

[ ] the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the claims:
pages _____ , as originally filed
pages _____ , as amended (together with any statment) under Article 19
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the drawings:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

[ ] the sequence listing part of the description:
pages _____ , as originally filed
pages _____ , filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language English which is

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[X] the language of publication of the international application(under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/ or 55.3).

3. With regard to any **nucleotide** and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained inthe international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disc losure in the international applicationas as filed has been furinshed.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages _____

[ ] the claims, Nos. _____

[ ] the drawings, sheet _____

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box(Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed." and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.*

INTERNATIONAL [redacted]LIMINARY EXAMINATION

[redacted]ational aplication No.
PCT/KR2003/000237

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-5	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-5	NO
Industrial applicability (IA)	Claims	1-5	YES
	Claims	None	NO

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: EP 0855384 A
D2: JP 04-224547 A

1. The present invention relates to a method for the continuous production of an aromatic carbonate by reacting a dialkyl carbonate and an aromatic hydroxyl compound in the presence of a heterogeneous catalyst, in a loop-type, catalyst-containing reaction apparatus, wherein a reactor equipped with a filter in which the catalyst is contained is connected with a heat exchanger portion for providing necessary heat during reaction, a reaction solution is circulated between the catalyst-containing portion and the heat exchanger portion via a circulation pump, and by-products can be eliminated via a distillation column connected with the reactor; and a reaction apparatus for the production of an aromatic carbonate.

D1 discloses a method for continuously producing an aromatic carbonate in the presence of a metal-containing catalyst in a reactor, while continuously withdrawing a high boiling point reaction mixture in liquid form from a lower portion of the reactor and continuously withdrawing a low boiling point reaction mixture containing a by-product in gaseous form from an upper portion of the reactor by distillation; and a reaction apparatus for the production of an aromatic carbonate.

D2 discloses a method for the production of an aromatic carbonate by containing a solid catalyst such as silica or titania in a reactor; and an apparatus for the production of an aromatic carbonate.

(Continued on Supplemental Sheet.)

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Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box V.

The present invention and the inventions of D1 and D2, all of which relate to a method for producing an aromatic carbonate, are in the same technical field. In addition, the reactor configuration of the present invention is the same as that of D1 in that a heat exchanger is connected with a lower portion of the reactor, and that a distillation column is connected with an upper portion of the reactor. Further, the operational principle of the reactor in the present invention is the same as that of D1 in that a reactant is introduced into the reactor, a high boiling point reaction mixture passes through the heat exchanger and then recirculates to the reactor; and that a low boiling point reaction mixture is eliminated by distillation in the distillation column and then recirculates to the reactor. The present invention shows a difference in the configuration of the reactor because a filter is provided in the inside of the reactor to prevent a heterogeneous catalyst from flowing out into a lower portion of the reactor. However, D2 discloses a method for producing an aromatic carbonate in a reactor containing a solid catalyst such as silica or titania, and it is obvious to a person skilled in the art to install a filter in the inside of a reactor to prevent a solid catalyst from flowing out into a lower portion of th reactor.

Accordingly, a person skilled in the art could have readily obtained the present invention by combining the teachings of D1 and D2, and no particular technical difficulty is found in the configuration of the present invention. In addition, the present invention does not exhibit any sharply improved effect beyond the combination of the effects of D1 and D2.

Therefore, the present invention does not meet the requirement of PCT Article 33(3).